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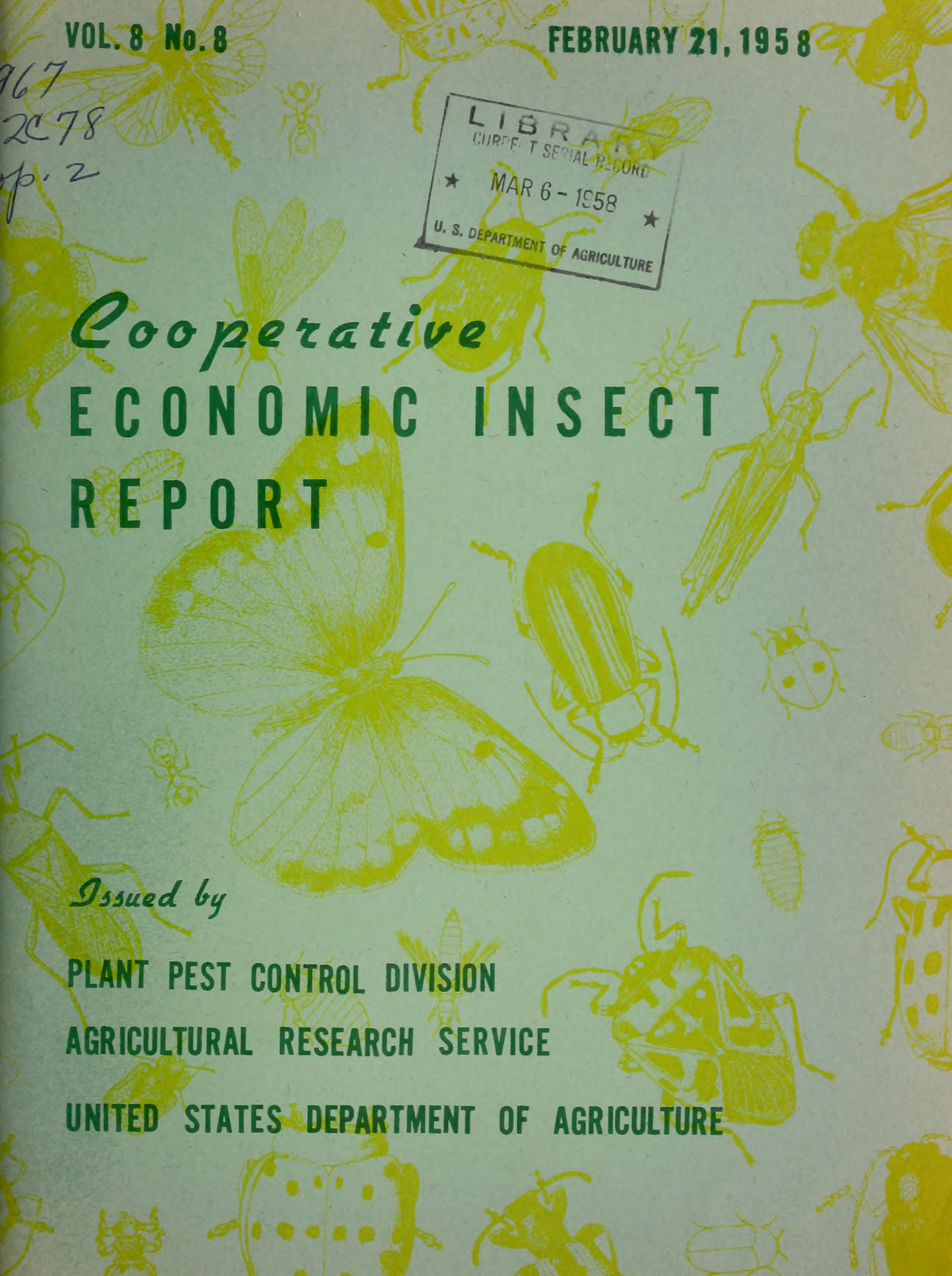

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

PLANT PEST SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Plant Pest Survey Section
Plant Pest Control Division
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Volume 8 February 21, 1957 Number 8

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

PEA LEAF WEEVIL active and damaging legumes in Willamette Valley. (p. 125).

PEAR PSYLLA ovipositing in Jackson County, Oregon. Adults active at Prosser, Washington. (p. 125).

Increased abundance of FOXGLOVE APHID eggs in northeastern Maine. (p. 126).

Distribution of BANDED CUCUMBER BEETLE. (p. 129)

SUMMARY OF INSECT CONDITIONS in some countries of the Near East, South Asia and Africa - 1957. (Afghanistan p. 131, Ethiopia p. 133, Iran p. 134, Iraq p. 136, Lebanon p. 137, Libya p. 138, Pakistan p. 140).

Reports in this issue are for the week ending February 14 unless otherwise designated.

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WEATHER BUREAU 30-DAY OUTLOOK

MID-FEBRUARY TO MID-MARCH 1958

The Weather Bureau's 30-day outlook for the period mid-February to mid-March calls for temperatures to continue to average below seasonal normals east of the Continental Divide with greatest departures over the northeast quarter of the nation. A warming trend is indicated during the first half of March over the Southeast where it has been abnormally cold. West of the Divide above normal temperatures are predicted. Precipitation is expected to exceed normal over the northwest quarter of the country and also along the Gulf and South Atlantic Coasts. Subnormal amounts are indicated in the far Southwest and also in the region of the Great Lakes. In unspecified areas near normal is predicted.

Weather forecast given here is based on the official 30-day "Resume and Outlook," published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D. C. Price $4.80 a year, $2.40 a half year.

WEATHER OF THE WEEK ENDING FEBRUARY 17

Last week's weather pattern was much the same as that for the week ending February 10. Temperatures were extremely cold east of the Rockies and unseasonably mild west of the Continental Divide, and heavy precipitation was again limited to areas in the Pacific and Gulf States. East of the Rockies the second consecutive very cold week, with history making snows along the Gulf and middle and north Atlantic coasts and additional freezes deep into Florida, was climaxed by another weekend severe cold wave. From the 10th through the 14th below freezing temperatures with snow, sleet, and freezing rain moved across the Gulf States from Texas to Florida. On the 12th and 13th another freeze in the Rio Grande Valley of Texas caused spotted crop damage. An inch of snow was measured at Lake Charles, La., on the morning of the 12th; it all melted before noon. By evening of the 12th the heaviest snow in a half century blanketed parts of the central and east Gulf coasts. Two inches covered the ground at New Orleans, La., and Burrwood in the extreme southeastern tip of the State measured 1.5 inches. In the Mobile, Ala., area 1.5 inches fell at Fort Morgan, 2 inches covered the deck of a pilot boat anchored 6 miles off shore, and on the morning of the 13th the temperature fell to 16° over a 1-inch snow cover. Tallahassee, Fla., measured 3 inches of snow, the most there since records began in 1895. In northern Florida the cover on the 13th extended as far south as the Suwanee River. On the morning of the 14th below-freezing temperatures again extended into southern Florida. On the 13th and 14th precipitation was general in the mid-continent area, falling as snow southward to the northern portions of Mississippi, Alabama, and Georgia. From the 15th to the 17th, a new storm formed in the Gulf, crossed the Southeast, and moved northward along the coast to Maine, bringing moderate rains to Gulf and south Atlantic coastal areas and heavy snows to the Appalachian and northeastern areas.

Snowfall during the storm exceeded a foot over much of the Appalachian region and northeast. In northeastern Alabama, Haleyville reported a depth of 12.5 inches on the 15th. In North Carolina the storm left a cover ranging from 8 to 12 inches in the mountains, and 1 to 6 inches in the Piedmont region. Washington, D. C., reported 14 inches; Baltimore, Md., 15.5 inches; and Allentown, Pa., 18 inches. Eighteen inches fell in much of eastern New York and 10 to 20 inches over most of New England. At Boston, Mass., a fall of 19.4 inches set new records for a single storm and for 24 hours. On the 17th Burlington, Vt., measured its deepest snow on record, 32 inches. High winds during and after the storm caused heavy drifting which greatly hampered transportation. A cold wave following in the wake of the storm brought subzero temperatures as far south as the northern portions of Arkansas, Alabama, and Georgia, and another freeze deep into Texas and Florida. A low of -23° at Clingman's Peak in the mountains of western North Carolina on the 17th was the lowest temperature ever recorded in that State. Average temperatures for the week ranged from 10° to 20° below normal east of the Rockies, and from 3° above normal in southern areas west of the Continental Divide to 12° in the north. In the Pacific Northwest, abnormally mild weather has persisted for as long as 10 weeks in some areas. In Washington, vegetative growth is 3 to 6 weeks ahead of normal and fruit buds are beginning to swell. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GREENBUG (Toxoptera graminum) - OKLAHOMA - Averaged 20-30 per linear foot on wheat in Hennessey area, Kingfisher County. Light, scattered damage evident. Few fields have been sprayed. (Owens). Several fields negative in Granite-Lone Wolf area, Greer and Kiowa Counties. (Hudson).

CHINCH BUG (Blissus leucopterus) - OKLAHOMA - Report of survey in 24 additional counties showed the number of bugs in hibernation per square foot of bunch grass averaged 0-3,517. This completes the study. (Fed.-State Chinch Bug Survey).

COWPEA APHID (Aphis medicaginis) - NEW MEXICO - Light to moderate infestations on alfalfa, roses and pyracantha, Dona Ana County. (Nielsen).

CLOVER SEED CHALCID (Bruchophagus gibbus) - VIRGINIA - Larvae heavy in birdsfoot trefoil seed received from out of State at Blacksburg, Montgomery County, for experimental purposes. (Evans).

SLUGS - OREGON - Damage greater than usual to legumes and fall-sown grain, due to mild winter weather. (Dickason, Every).

PEA LEAF WEEVIL (Sitona lineata) - OREGON - Adult activity increasing as unusually mild weather continues, Forest Grove. Adults averaged 1 per 5 sweeps on red clover, February 2, and 20 per 5 sweeps in same fields, February 7. About 15 weevils collected February 7 had laid about 2 dozen eggs by February 10, indicating this species is capable of ovipositing in midwinter in Washington County. (Prescott). Active and damaging seedling field peas, vetch, clover and alfalfa, Polk and Yamhill Counties, Feb. 12. Damage recent, apparently occurring during brief periods of warm weather, and indicating considerable economic importance in Willamette Valley during 1958. (Dickason, Every).

SOYBEAN CYST NEMATODE (Heterodera glycines) - One new infestation found in Fulton County, KENTUCKY. All inspections negative in KANSAS, NEBRASKA and WISCONSIN. (PPC, Cent. Reg., Jan. Rept.).

FRUIT INSECTS

PEAR PSYLLA (Psylla pyricola) - OREGON - Fairly high population of winter adults on pear trees since latter part of January, Jackson County. First eggs found February 3. Considerable egg laying February 9. (Gentner). WASHINGTON - Overwintering adults active in pear orchards near Prosser, Benton County. (Brannon).

WOOLLY APPLE APHID (Eriosoma lanigerum) - WASHINGTON - Living adults and nymphs on apple limbs at Pullman, Whitman County, February 5. This is first time in 5 years this species has been alive on aerial growth in February. Lowest temperature recorded to date was 16° F. in November. (Johansen).

SAN JOSE SCALE (Aspidiotus perniciosus) - VIRGINIA - Very heavy on peach trees in small orchard, Middlesex County. (Rollins).

A THRIPS (Frankliniella occidentalis) - CALIFORNIA - Medium on lemon and tangerine at Chula Vista, San Diego County. (Cal. Coop. Rept.).

GREEN PEACH APHID (*Myzus persicae*) - OREGON - Preliminary survey shows practically no eggs wintering on peach trees. (Gentner).

TRUCK CROP INSECTS

IMPORTED CABBAGEWORM (*Pieris rapae*) - CALIFORNIA - Light on cabbage in San Fernando Valley, Los Angeles County. (Cal. Coop. Rept.).

CABBAGE LOOPER (*Trichoplusia ni*) - CALIFORNIA - Local heavy infestation in cabbage and red cabbage, with 75 percent of heads unmarketable in one field, San Fernando Valley, Los Angeles County. (Cal. Coop. Rept.).

CABBAGE APHID (*Brevicoryne brassicae*) - GEORGIA - Light infestations on cabbage and turnips, Colquitt and Thomas Counties. (February 12, Johnson).

ARTICHOKE PLUME MOTH (*Platyptilia carduidactyla*) - CALIFORNIA - Light on artichokes in Watsonville area, Santa Cruz County. (Cal. Coop. Rept.).

ONION THRIPS (*Thrips tabaci*) - GEORGIA - Light to moderate infestations on onions, Tattnall County. (February 11, Johnson). CALIFORNIA - Very light infestations in onion fields in Coachella Valley, Riverside County. (Cal. Coop. Rept.).

ORANGE TORTRIX (*Argyrotaenia citrana*) - CALIFORNIA - Medium larval infestation on bushberries in Watsonville area, Santa Cruz County. (Cal. Coop. Rept.).

A LEAF BLOTCH MINER - CALIFORNIA - Heavy larval infestation in bark of bushberries in Watsonville area, Santa Cruz County. (Cal. Coop. Rept.).

Increased abundance of foxglove aphid eggs in northeastern Maine. Aphid eggs on hawkweed in northeastern Maine during late November 1957 were about five times as abundant at infested stations as at that time in 1956. They were found at 4 out of the 10 sampling stations as compared to only 2 a year ago. The present situation resulted in part because foxglove aphids on hawkweed were both actually and relatively more abundant in the fall of 1957 than during that season of 1956. They were about twice as abundant during the fall as they were a year ago, and the percent of plants infested was about one and a half times as large. Also, because of the open, late fall in 1957, likely a higher percentage than usual of the oviparae matured and deposited eggs. On the basis of past experience and of information at hand it would appear that foxglove aphid eggs are now present at most sampling stations. With favorable weather, populations of this aphid developing on hawkweed in the spring of 1958 could be larger than a year ago. (Wave)

TOBACCO INSECTS

VEGETABLE WEEVIL (*Listroderes costirostris obliquus*)- GEORGIA - Infestations light on tobacco plant beds, Tift, Colquitt, Thomas, Cook, Berrien and Coffee Counties. (February 13, Johnson).

SPRINGTAILS - GEORGIA - Light to moderate infestations on tobacco plant beds, Tift, Colquitt and Cook Counties. (February 11, Johnson).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

GYPSY MOTH (*Porthetria dispar*) - NEW YORK - Scouting around 1957 attracting-trap sites in Clinton County nearing completion, with small infestations found at or near 18 of these sites. NEW JERSEY - Intensive scouting of approximately 500 acres at each of three positive 1957 trap sites completed. No evidence of infestations found. Trapping plans for WEST VIRGINIA, VIRGINIA, DELAWARE, MARYLAND and NEW JERSEY in 1958 have been completed. (PPC, East. Reg., Jan. Rept.).

BROWN-TAIL MOTH (*Nygmia phaeorrhoea*) - MAINE - Light infestation found in small stand of wild plum. All 41 webs were cut and burned immediately. (PPC, East. Reg., Jan. Rept.).

COTTONY MAPLE SCALE (*Pulvinaria innumerabilis*) - WASHINGTON - As in 1956, infestations are very heavy on maples in Pullman area, Whitman County. (Dailey).

BLACK TURPENTINE BEETLE (*Dendroctonus terebrans*) - ARKANSAS - Increasing activity noted in the Bradley County area where control has been applied. Activity also reported in Nevada County. (Ark. For. Pest Rept.).

A PINE SAWFLY - ARKANSAS - Surveys show about 45,000 acres involved in area of heaviest attack, with spotty infestations south of El Dorado to the Louisiana State line, Union County. (Ark. For. Pest Rept.).

AN ARBORVITAE APHID - OKLAHOMA - Heavy on arborvitae in Tulsa, Tulsa County. (Pinkston).

AZALEA LEAF MINER (*Gracilaria azaleella*) - CALIFORNIA - Medium infestation in azalea leaves in Pleasant Hills area, Contra Costa County. (Cal. Coop. Rept.).

A LEAF ROLLER (*Platynota stultana*) - CALIFORNIA - Medium infestation on azaleas in Pleasant Hills area, Contra Costa County. (Cal. Coop. Rept.).

LONG-TAILED MEALYBUG (*Pseudococcus adonidum*) - CALIFORNIA - Medium infestation on mondograss at Carpinteria, Santa Barbara County. (Cal. Coop. Rept.).

A WHITEFLY (*Pealius kelloggi*) - CALIFORNIA - Nymphs heavy on *Prunus lyoni* in Sacramento, Sacramento County. (Cal. Coop. Rept.).

INSECTS AFFECTING MAN AND ANIMALS

EAR TICK (*Otobius megnini*) TEXAS - Averaged 4 per ear per head of 18 range cattle examined in Travis County. (Garner). NEW MEXICO - Moderately heavy in ears of cattle, Dona Ana and Luna Counties. (Nielsen).

CATTLE LICE - NEW MEXICO - Lighter than usual throughout State for past month. (Nielsen).

COMMON CATTLE GRUB (*Hypoderma lineatum*) - VIRGINIA - Averaged 23 per animal in one herd, Augusta County. (Turner).

FOWL TICK (*Argas persicus*) - CALIFORNIA - Light infestation in chicken houses at Ridgecrest, Kern County. (Cal. Coop. Rept.).

STORED-PRODUCT INSECTS

KHAPRA BEETLE (*Trogoderma granarium*) - MINNESOTA - Inspections in Duluth, Rush City, Cologne and Northfield during January were negative. (PPC, Cent. Reg.). VIRGINIA - Inspections of off-farm storage facilities were initiated in the eastern area during January, and will include establishments in 25 counties. Purpose of survey is to complete initial survey begun in 1957. PENNSYLVANIA - Four inspections in Philadelphia district were negative. (PPC, East. Reg., Jan. Rept.).

BENEFICIAL INSECTS

A SNOUT MITE - CALIFORNIA - Adults medium on navel orange at Fresno, Fresno County. (Cal. Coop. Rept.).

MISCELLANEOUS INSECTS

CLOVER MITE (*Bryobia praetiosa* complex) - OKLAHOMA - Severe infestation in dwelling *Oklahoma City, Oklahoma* County. (Shaw). VIRGINIA - Heavy on window sills and books on shelves in school, Appomattox County. Det. L. Cagle. (Rowell, Smith).

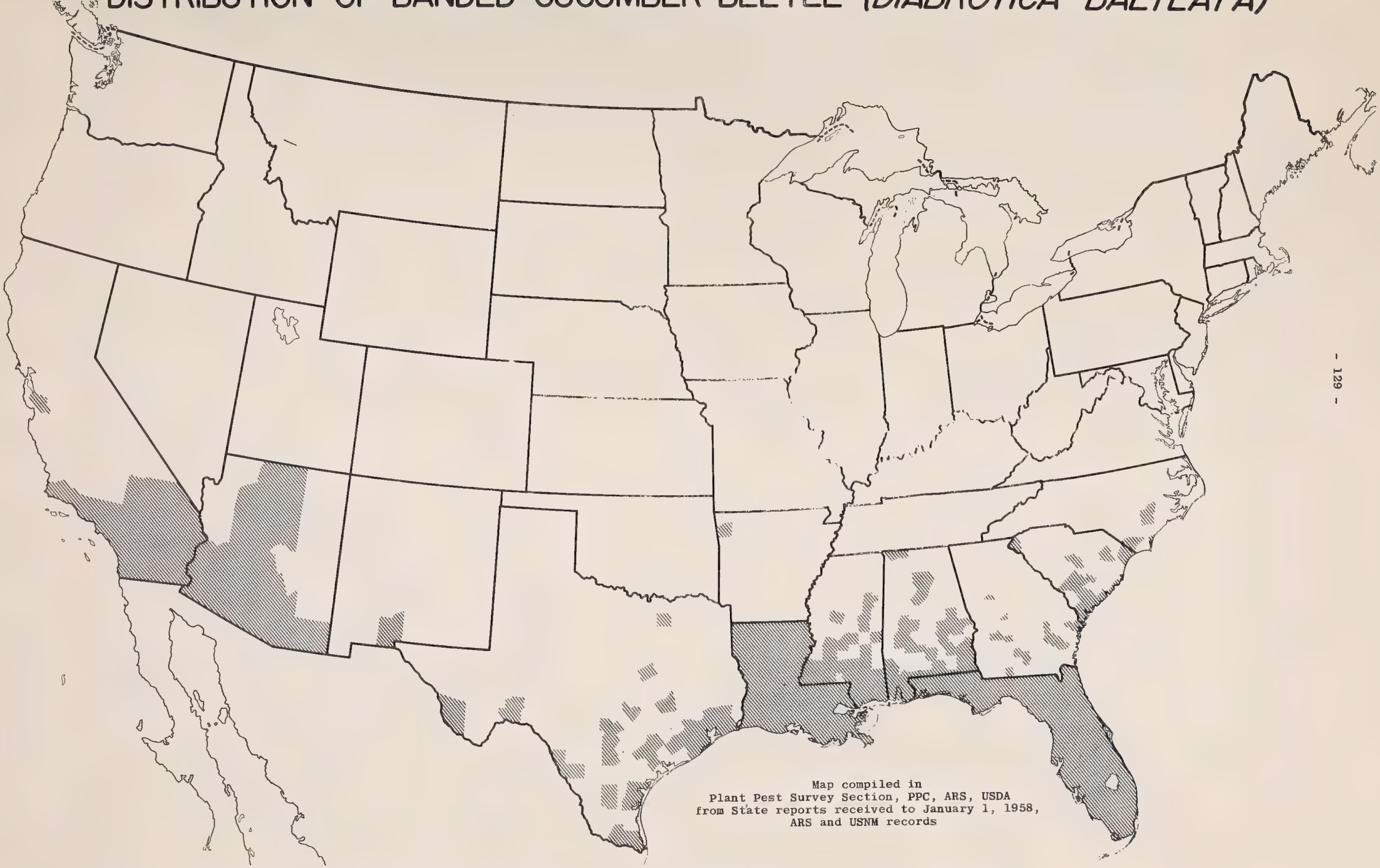
IMPORTED FIRE ANT (*Solenopsis saevissima* v. *richteri*) - TEXAS - Three new infested counties are *Liberty, Harris* and *Tyler Counties*. (Turney). MARYLAND - During January 214 acres were surveyed in Howard County. No imported fire ant found. (PPC, East. Reg., Jan. Rept.).

TERMITES - CALIFORNIA - Specimens of *Cryptotermes brevis* were taken from plywood of folding chairs packed in *crates from the Hawaiian* Islands and stored in a warehouse at Sacramento. This insect does considerable damage in the Hawaiian Islands and, although is not known to occur in California, could possibly exist in parts of the State. Specimens of *Coptotermes formosanus* were also taken in the same shipment. (Cal. *Coop. Rept.*).

LIGHT TRAPS

	Hel. zea	Pseud. unip.	Plath. scab.	Laph. frug.	Agrot. yps.	Perid. marg.	Felt. subt.	Prod. ornith.
FLORIDA								
Quincy 1/20					1			2
Sanford 1/23-29		1			5			
SOUTH CAROLINA (Counties)								
Charleston 2/3-9					1		2	
Oconee 2/8-14			3					
TEXAS								
Brownsville 2/2-8	2	30		52	7	8	16	

DISTRIBUTION OF BANDED CUCUMBER BEETLE *(DIABROTICA BALTEATA)*



Map compiled in
Plant Pest Survey Section, PPC, ARS, USDA
from State reports received to January 1, 1958,
ARS and USNM records

SUMMARY OF INSECT CONDITIONS IN SOME COUNTRIES OF THE NEAR EAST, SOUTH ASIA, AND AFRICA

1957

The summaries of insect conditions that follow have been submitted in the 1957 Annual Report of the Regional Insect Control Project with headquarters in Beirut, Lebanon. The first attempt to present information on the more important insect pests of the Near East and South Asia in the Cooperative Economic Insect Report was made in 1955 following a request from the survey committee of the Entomological Society of America. For the benefit of CEIR readers, it may be well to point out that the Regional Insect Control Project is a cooperative program operated by the Plant Pest Control Division, ARS, in accordance with an agreement signed on February 18, 1954, between the U. S. Department of Agriculture and the Foreign Operations Administration, now the International Cooperation Administration. At the present time a staff of 10 entomologists are stationed in eight countries working with personnel of the U. S. Operations Missions and Ministries of Agriculture. The work of these entomologists is designed to fulfill commitments to the host countries with respect to the evaluation of locust problems, the demonstration of control practices, development of insect surveys, and the training of nationals in methods, procedures and the organization of applied entomology and plant quarantine work. During the last few years the Departments of Plant Protection have manifested a great desire for survey work, so that an increased effort has been made to collect, identify, and record the insect species of economic importance. First-hand information on foreign pests should serve to familiarize the entomologist and the pesticide industry of this country with the major pests in the areas reported on. It should lead to better understanding and mutual interest in entomological problems common to the United States and other nations. (E. J. Hambleton).

Summary of Insect Conditions in Afghanistan

By D. D. Shallow

Cereal and Forage Insects: A CHINCH BUG caused damage during June to the wheat fields in the Logar Valley. The SEN PEST (Eurygaster integriceps) was present in the province of Mimanah along the Oxus River, which is the boundary between Russia and Afghanistan, but caused no serious crop loss. CUTWORMS were the only pests that attacked the huge acreage of corn in the early stage. No insects were found feeding on the older corn plants. ARMYWORMS were in great numbers on the small grains and averaged 15-20 per sweep during June in the Kabul Province. There appeared to be two species, one of which is Pseudaletia unipuncta. In the Helmand Valley, Lashkar Gah area, alfalfa was attacked in spotty infestations by a CLOVER WEEVIL (Hypera sp.) and armyworms. In the central part of the country, PEA APHID (Macrosiphum pisi) was abundant from May to October. Many species of GRASSHOPPERS were attacking forage crops in all parts of Afghanistan and during July in the Logar Valley there were 8-11 (average) last stage nymphs per sweep. DESERT LOCUST (Schistocerca gregaria) was never a problem in the southern provinces where it usually causes some damage. The MOROCCAN LOCUST (Dociostaurus moroccanus) and the ITALIAN LOCUST (Calliptamus poss. italicus) along the Russian border in the north provinces never developed into a threatening population.

Fruit Insects: The grape industry in Afghanistan is one of the biggest sources of foreign exchange that the country has, but the number of insects causing damage to the grapes is very limited. A HORNWORM is found in abundance eating the leaves in some vineyards so that farmers must hand pick and destroy them. A HORNET (Vespa orientalis) causes damage to both unpicked and harvested grapes. An ALMOND WEBWORM (*Malacosoma* sp.) is a very serious pest of the almond trees from April until June and infests 90 percent of the trees from 40 miles north of Kabul to Kalat about 100 miles north of Khandahar, occurring in such numbers as to reduce the crop yield by 50 percent. The almond trees are also severely infested with a TERRAPIN SCALE which has not yet been definitely identified. CODLING MOTH (*Carpocapsa pomonella*) is abundant on apples. A PEACH TREE BORER (*Synanthedon* sp.) causes severe damage in the Kabul area and many orchards have been pulled out.

Citrus Insects: The only citrus grown is the sour orange in the Jalalabad area or eastern province. A WHITEFLY (*Dialeurodes* sp.) causes severe damage, and 90 percent of the trees were infested during 1957 with three generations.

Cotton Insects: Surveys made in the largest cotton-growing area of the north, Khattagan Province, have not revealed any SPINY BOLLWORM (*Earias insulana*) or PINK BOLLWORM (*Pectinophora gossypiella*). The pink bollworm has been reported in Jalalabad Province, but three differently timed surveys in April, July and September did not produce any. The spiny bollworm is found in the Jalalabad area and the south province of Khandahar. During the year the infestation in the south did not exceed 30 percent of squares or bolls and in the eastern province Jalalabad, not over 15 percent squares or bolls. COTTON APHID (*Aphis gossypii*) is the only insect that has in past years damaged the northern cotton crop and it does not usually appear in great numbers until October.

Truck Crop Insects: A CABBAGEWORM (*Pieris rapae*) did not require control measures in 1957, but is commonly found.

Sugarcane Insects: The SUGARCANE LEAFHOPPER (*Pyrilla perpusilla*) is also found commonly around Jalalabad.

Forest and Shade Trees: Several types of poplar trees are attacked by borers. The Lombardy poplar is the most important lumber tree and it is about 15 percent infested with *Saperda* sp.

Insects Affecting Man and Animals: Several kinds of MOSQUITOES are found in different parts of Afghanistan and there is malaria, but no accurate statistics are available as to the incidence. BED BUGS (*Cimex lectularius*) are found in almost every house in Kabul and FLEAS are as common. In the Khandahar area, SAND FLIES are found and some are carriers of the infectious kala azar and sand fly fever. A CATTLE TICK (*Boophilus* sp.) is distributed throughout Afghanistan on cows, sheep, horses and mules. It was extremely abundant during 1957 with as many as 200 per animal.

Stored Product Insects: One bad infestation of the INDIAN-MEAL MOTH (*Plodia interpunctella*) was found in bagged, stored, pistachio nuts. An estimated 20 percent of the nuts were lost before control was started. These three insects are commonly found in stored grains: KHAPRA BEETLE (*Trogoderma granarium*), LESSER GRAIN BORER (*Rhyzopertha dominica*) and the RICE WEEVIL (*Sitophilus oryza*).

Summary: The amount of damage by economic insect pests during 1957 in Afghanistan was not great. This is the first year a summary of insect conditions has been made, and there are no statistics available of any kind concerning previous insect outbreaks, but it appears now that this country is fortunately not yet bothered by too many economic pests. This may be due to the high (up to 24,000 foot) mountain barriers, the cultivated valley's isolation, and no great areas planted to any large amount of one particular crop. There are also many parasites and predators at work plus the fact that only a very, very small amount of insecticide has been used, which could upset natural balances.

Summary of Insect Conditions in Ethiopia

By W. C. Kurtz

Reports and observations of insect and plant disease conditions in Ethiopia are quite meager and scattered and consequently no general distribution pattern can be determined. Present plans include insect and plant disease surveys and gradually more definite information will be available on the extent and degree of crop pest infestations, crops infested and monetary losses. These are some of the most important plant pests in Ethiopia in 1957: An ARMYWORM locally known as "Tamche" is quite widespread, damaging a variety of crops including wheat, barley and teff, which comprise a high percentage of small grains. Reports of damage are frequently received. Many successful control demonstrations have been conducted. A LEPIDOPTEROUS LEAF FEEDER on citrus causes considerable damage. Complete defoliation has been noted on small orange trees. Several scales have been observed on citrus including the COTTONY-CUSHION SCALE (Icerya purchasi). A small COLEOPTEROUS INSECT has been observed in several locations infesting red coffee berries, causing considerable damage. DURRA STALK BORER (Sesamia cretica) has been observed doing considerable damage throughout Ethiopia to corn and sorghums. FRUIT TREE INSECTS and diseases are common as indicated by damaged fruit in the market. Apparently insect losses are held in check somewhat by natural predators; TERMITES are quite common as mound building and subterranean types. SUBTERRANEAN TERMITES are common throughout Ethiopia due to the type of building construction. Even the newly constructed houses, as observed in Addis, are badly infested due to improper construction. Native houses seldom last but a few years. STORED GRAIN INSECTS are quite common. Storage facilities are very poor and inadequate. No large storage bins or elevators properly equipped for long-period storage exist. A PINK BOLLWORM (probably Pectinophora gossypiella) has been reported as not widely spread over Ethiopia. In Eritrea, where cotton is more extensively grown, the pink bollworm is more of a problem. SPINY BOLLWORM (Earias insulana) is also known to exist in Ethiopia, but the distribution and amount of damage is unknown. It has been reported at the Alomata Experimental farm, but has not been a serious problem.

Many species of native GRASSHOPPERS do widespread damage according to reports. SPOTTED ALFALFA APHID (Therioaphis maculata) was found during a special survey in 1956. A low population of the aphid was found, which was attributed to the presence of a coccinellid. Insects affecting public health, such as FLIES, MOSQUITOES, FLEAS, BED BUGS, LICE, TICKS and ROACHES are quite common and little has been done to control them. Sanitation would be a prerequisite before much success could be attained with other forms of control. Preliminary work in malaria control has been started through a U. S. Operations Mission cooperative project with the Ethiopian Ministry of Health. Many other pests create a health hazard and nuisance in the household such as CLOTHES MOTHS, SILVERFISH, ANTS, SCORPIONS, CARPET and LARDER BEETLES, DERMESTIDS and SPIDERS. Some deaths of babies have been reported from bites by scorpions. Little attempt has been made to control these pests and inadequate storage and cleaning facilities in the homes and shops has helped sustain damaging infestations. LIVESTOCK PARASITES, both external and internal, are quite common and destructive. Through a U. S. Operations Mission and Ministry Joint Fund Livestock Improvement Program demonstrations are being carried on for the control of these pests. The TSETSE FLY has been reported to occur in some parts of Ethiopia. Honey is an important product as the national beverage called "Tedg" is made from it. Most of the honey is obtained from robbing wild BEE trees and woven open end cylinders placed in the trees for hives. Most of the honey is of poor quality, infected with foul brood and not properly processed. Very little domestication of bees is attempted, but they could prove a good source of income as well as serve as pollinators.

Summary of Insect Conditions in Iran

By G. B. Riley, R. L. Linkfield and R. Q. Gardenhire

Cereal and Forage Insects: MOROCCAN LOCUST (*Dociostaurus moroccanus*) infestations were very widespread over Fars and Gorgan Provinces, but there were no important invasions of croplands, due to control measures applied to 1,265,000 acres of rangeland. DESERT LOCUST (*Schistocerca gregaria*) - For the third consecutive year there were no invasions into Iran. NATIVE GRASSHOPPERS (*Calliptamus* poss. *italicus*, *Dociostaurus* spp., and others) were general pests in most areas of Iran. Control measures were applied to 415,000 acres. SEN PEST (*Eurygaster integriceps*) infestations were at the lowest level in several years with the only serious damage occurring in Kerman Province. Chemical control was applied to only 30,000 acres. ALFALFA WEEVIL (*Hypera postica*) destroyed most of the first cutting and much of the second cutting of alfalfa throughout the country. DURRA STEM BORER (*Sesamia cretica*) caused severe damage in most corn-growing areas and was the only insect of economic importance observed on sugarcane in Khuzistan Province. CEREAL LEAF MINER (*Syringopais temperatella*) (Det. by J. F. G. Clarke and H. W. Capps) was generally distributed throughout southwestern Iran, extending from Dezful in Khuzistan Province to Jahrom in Fars Province. The most serious damage observed or reported was at Kazerun, where several hundred acres of wheat were almost totally destroyed. SPOTTED ALFALFA APHID (*Therioaphis maculata*) was again found in all areas observed but no economic damage was reported.

Truck Crop Insects: BEET ARMYWORM (*Laphygma exigua*) damage was severe in all areas, but infestations on sugarbeet were not generally as bad as in 1956. Potatoes were also lightly infested. SUGAR BEET CROWN BORER (*Gnorimoschema ocellatella*) infestations were quite heavy in practically all areas, especiallly late in season. A SUGAR BEET STEM BORER (*Lixus* sp.) (Det. by R. E. Warner) was common in most areas, but was generally of minor importance. A SPIDER MITE (*Tetranychus* sp.) caused very serious damage to sugar beets during the summer months, especially where control measures had been applied against other insects. BALUCHISTAN MELON FLY (*Myiopardalis pardalina*), generally distributed throughout the country, was the major pest on all types of melons. A MELON BEETLE (*Epilachna chrysomelina*) caused heavy damage to melon foliage where control was not applied. CABBAGE APHID (*Brevicoryne brassicae*) infestations were heavy on cabbage. CABBAGEWORMS (*Pieris rapae*, *Pieris brassicae* and *Plutella maculipennis*) were commonly observed on cabbage. SPINACH LEAF MINER (*Pegomya hyoscyami*) was generally distributed on sugar beets and spinach, but not of great economic importance. APHIDS and SPIDER MITES were common on many vegetable crops.

Fruit and Nut Insects: CODLING MOTH (*Carpocapsa pomonella*) was probably the most important insect pest of deciduous fruits, with heavy damage to apple, pear, and quince occurring in all areas. Even in orchards where control measures had been applied several times, damage to apples frequently exceeded 50 percent. ERMINE MOTH (*Hyponomeuta* prob. *padella*) caused extensive defoliation of apple trees during spring months in many areas. PEACH TWIG BORER (*Anarsia lineatella*) was observed infesting fruits of peach, plum, and apricot in the Karaj area. LACE BUGS (*Stephanitis pyri*) infested apple and pear foliage in most areas. A DIASPID SCALE (*Chionaspis asiatica*) - Spotty infestations on plum at Karaj. DICTYOSPERMUM SCALE (*Chrysomphalus dictyospermi*) was the most destructive and widespread of the scale insects infesting citrus in the Caspian Sea area. PURPLE SCALE (*Lepidosaphes beckii*) was heavy on citrus in Ramsar area, but not generally distrubuted. GLOVER SCALE (*Lepidosaphes gloverii*) - Scattered infestations on citrus at Ramsar. ORANGE PULVINARIA SCALE (*Pulvinaria aurantii*) was heavy on citrus in Chalus and Lahijan areas. YEW SCALE (*Pulvinaria floccifera*) infestations were light on citrus in the Rudsahr area. COTTONY-CUSHION SCALE (*Icerya purchasi*) infestations continued light throughout Caspian area due to effective control by VEDALIA

(Rodolia cardinalis). CHINESE WAX SCALE (Ceroplastes sinensis) was quite heavy on citrus at Ramsar. ORIENTAL YELLOW SCALE (Aonidiella orientalis) infestations on citrus in southern Iran ranged from light to heavy, dependant on control by the parasite, Aphytis sp. CITRUS BLACKFLY (Aleurocanthus woglumi) was not observed to be of economic importance on citrus, but was quite heavy on Zizyphus spp. foliage in Khuzistan Province. GRAPE MEALYBUG (Pseudococcus maritimus) was light on citrus in Lahijan area. CITRUS RUST MITE (Phyllocoptruta oleivora) was light and spotted at Ramsar, but heavy in Rudsahr area. CITRUS RED MITE (Panonychus citri) was abundant over most of the Ramsar and Rudsahr areas. A SPIDER MITE (Tetranychus sp.) was also abundant on citrus in the Ramsar area. A CATERPILLAR (Papilio sp.) defoliated orange trees at Bahbahan in southwestern Iran, but was very light at Bam in southeastern Iran. OLD WORLD DATE MITE (Oligonychus afrasiaticus) completely destroyed the date crop in some villages around Bahbahan, and greatly reduced yield in many surrounding villages. A DATE FULGORID (Ommatissus binotatus) - Infestations variable in different sections of southern Iran; control measures applied to 200,000 date palms in Bandar Abbas and Shahdad areas. PARLATORIA DATE SCALE (Parlatoria blanchardi) infestations ranged from very light in many areas to heavy in a few areas of southern Iran. A NITIDULID BEETLE (probably Carpophilus hemipterus) was causing heavy damage to ripening dates in the Bam area of southeastern Iran. OLIVE SCALE (Parlatoria oleae) was generally prevalent on olives in all areas observed. BLACK SCALE (Saissetia oleae) was confined to a small infestation on olives at Rudbar. Quarantine measures have been effected to prevent further spread of this pest. PISTACHIO PSYLLID (Agonoscena targioni) was the most important pest of pistachios and control measures were frequently ineffective. PISTACHIO LEAFHOPPER (Idiocerus stali) destroyed a high percentage of the nut crop in those areas where control measures were not applied. PISTACHIO NUT BORERS (Eurytoma plotnikovi and Megastigmus pistaciae) were again serious pests in most areas. A GELECHIID NUT BORER (Recurvaria pistacicola) was abundant on pistachios everywhere in Iran. A HAIRY CATERPILLAR (Ocneria terebynthina) almost completely defoliated many pistachio trees in the Zarand area. This same caterpillar was present in Ghazvin and other pistachio areas but caused minor damage. A GELECHIID LEAF MINER (Nepticula promisa) caused heavy damage to pistachio foliage in some orchards at Rafsenjan. PISTACHIO APHIDS (Forda spp.) were generally prevalent but were of minor economic importance. VINE MOTH (Lobesia botrana) - There were no records of spread to areas beyond the small area of infestation on grapes in Azerbaijan Province. A GRAPE MOTH (Sparganothis pilleriana) was an important pest of grapes in the Ghazvin area. A SPHINGID (Celerio lineata livornica) also infested grapes in the Ghazvin area.

Cotton Insects: SPINY BOLLWORM (Earias insulana) infestations have now been recorded from Khuzistan, Fars, Kerman, Baluchistan, Kermanshah, Isfahan, and Tehran Provinces of Iran. Infestations on cotton ranged from extremely light to extremely heavy, apparently in direct relation to climatic conditions. A COTTON BOLLWORM (Heliothis armigera) - The most serious damage to cotton in several years occurred in the Caspian area. PINK BOLLWORM (Pectinophora gossypiella) was not observed nor reported to be of economic importance anywhere in Iran. BEET ARMYWORM, APHIDS, THRIPS, SPIDER MITES, and WHITEFLIES were commonly found on cotton, but infestations were not unusually severe.

Stored Product Insects: KHAPRA BEETLE (Trogoderma granarium) was the most serious pest of stored grains in southern Iran. RICE WEEVIL (Sitophilus oryza) predominated in the northern regions. RED FLOUR BEETLE (Tribolium castaneum) and LESSER GRAIN BORER (Rhyzopertha dominica) were encountered throughout Iran. GRANARY WEEVIL (Sitophilus granarius) was restricted to temperate areas. The following species also occurred: In flour and flour mills - ALMOND MOTH (Ephestia cautella), CONFUSED FLOUR BEETLE (Tribolium confusum), MEDITERRANEAN FLOUR MOTH (Anagasta kuhniella), and FLAT GRAIN BEETLES (Laemophloeus spp.); in dried fruits - DRIED FRUIT BEETLES (Carpophilus spp.), SAW-TOOTHED GRAIN BEETLE (Oryzaephilus surinamensis), ALMOND MOTH, TOBACCO

MOTH (Ephestia elutella), CADELLE (Tenebroides mauritanicus), INDIAN-MEAL MOTH (Plodia interpunctella), and LESSER GRAIN BORER; in legume seed - RED FLOUR BEETLE and ALMOND MOTH; in tobacco - CIGARETTE BEETLE (Lasioderma serricorne) was very serious in some areas.

Miscellaneous Insects: SESAME LEAFHOPPERS (Circulifer opacipennis and Orosius albicinctus) (Det. by J. P. Kramer) caused serious damage to Sesamum indicum in Khuzistan Province and was reported to be the most serious pest of sesame. DICTYOSPERMUM SCALE (Chrysomphalus dictyospermi) - Light infestations on tea in Ramsar and Lahijan. CHAFF SCALE (Parlatoria pergandii) - Light infestations on tea in Lahijan area. YELLOW SCALE (Aonidiella citrina) - Light infestations on Prunus laurocerasus in Lahijan area. APHIDS were reported to be the most serious pest on henna (Lawsonia alba) in the Bam area. WHITEFLIES were also observed in great abundance on henna at Bam.

Beneficial Insects: SEN PEST PARASITE (Microphanurus semistriatus) - About 80 million artificially reared for field release this year. SPOTTED ALFALFA APHID PARASITE (Trioxys utilis) - About 700 parasites were collected in Khuzistan Province and shipped to the United States. A CARABID BEETLE (Calosoma sp.) - A shipment of this predator was received from the Territory of Hawaii. An attempt is being made to establish the beetle in Iran a as a biological control agent against the BEET ARMYWORM (Laphygma exigua). CONVERGENT LADY BEETLE (Hippodamia convergens) was feeding extensively on sugarbeet aphids at Meshed. VEDALIA (Rodolia cardinalis) continued to effect good control of COTTONY-CUSHION SCALE in the Caspian area. A COCCINELLID (Stethorus gilvifrons) (Det. E. A. Chapin) was observed feeding on sugarbeet SPIDER MITES (Tetranychus sp.) at Karaj. An EULOPHID PARASITE (Aphytis sp.) was introduced into the Jiroft citrus area from Khuzistan Province for the biological control of Aonidiella orientalis.

Summary of Insect Conditions in Iraq

By W. O. Ridgway

In collaboration with the following Iraqi Government Personnel: Dr. Ali Abdul Hussain, University of Wisconsin 1953-1956; Messrs. Wahhab Monir, Utah State College, 1949-1952; Othman Redha Ali, University of California, 1951-1954; Izzet M. Khieri, Kansas State College, 1951-1954; Anis Niamat, North Carolina State, 1954-1957; and Anis J. Sosi, Iraq Agricultural College, 1955.

Cereal and Forage Insects: The SEN PEST (Eurygaster integriceps) was again the main pest of barley and wheat. Unusual heavy spring rains delayed and prevented extensive developments in some areas of northern Iraq. Spotted nature of infestations made aerial controls difficult. The often mistaken Aelia rostrata was present but not in damaging numbers. DURRA STALK BORER (Sesamia cretica) was a problem in imported sorghum varieties and on the limited corn production in Iraq. ALFALFA WEEVILS (Hypera postica) caused severe damage to the spring cuttings of alfalfa in central Iraq. The SPOTTED ALFALFA APHID (Therioaphis maculata) was also present on alfalfa in central Iraq. SYRPHID FLY larvae and LADY BEETLES were common in the area. The honeydew on the alfalfa plants made hand-harvesting difficult. Mixed species of NATIVE GRASSHOPPERS caused some concern as they moved into margins of green crops from harvested cereal crops or adjacent desert habitats. DESERT LOCUST (Schistocerca gregaria) was not found in Iraq in 1957. EAR COCKLE DISEASE, caused by a nematode (Anguina prob. tritici) infesting the kernels of headed wheat, was quite abundant in southern Iraq.

Fruit Insects: CODLING MOTH (Carpocapsa pomonella) was common wherever apples were grown. WOOLLY APPLE APHID (Eriosoma lanigerum) was spreading into many areas of Iraq. A BUPRESTID BORER (Sphenoptera sp.) caused heavy damage to apricot and some damage to peach and plum trees. Entire branches were killed by extensive boring during late summer of the previous year. A FULGORID, called "Dubas", (Ommatissus binotatus) was common during the spring throughout central Iraq. Approximately 2,235,272 palm trees and shoots were hand dusted by an organized control campaign on this pest. The DATE STEM BORER (Oryctes elegans) did some damage to date fruiting stems. In southern Iraq ALMOND MOTH (Ephestia cautella) caused some concern in dates packed for export. The limited citrus-growing areas of Iraq appeared to be relatively free of serious insect pests. Some SCALES (Parlatoria spp.) were observed.

Truck Crop Insects: APHIDS on cabbage, melons, lettuce, tomatoes and sugar beets were common. Severe damage to melons occurred in some areas. WHITEFLIES (Bemisia spp.) were heavy on some melons, eggplants and on blackeyed peas where adjacent. EGYPTIAN COTTONWORM (Prodenia litura) caused damage to okra, onion stems, tomatoes and beans. Okra was also infested with the SPINY BOLLWORM (Earias insulana). BALUCHISTAN MELON FLY (Myiopardalis pardalina) was a major pest on melons. A MELON BEETLE (Epilachna chrysomelina) was common on cucurbits and damaged leaves of numerous vegetable plants. RED CUCUMBER BEETLE (Aulacophora foveicollis) severely damaged early spring plantings of cucurbits by tunneling the stems at the ground level. Adults were noted feeding on flowers throughout the summer. WATERMELON STEM BORER (Apomecyna arabica) was not too serious a problem in 1957. MOLE CRICKETS (Gryllotalpa prob. gryllotalpa) were common in irrigated vegetable and flower gardens. A CABBAGEWORM (Pieris rapae) was common throughout the season.

Cotton Insects: The major cotton insect problem in central Iraq is the SPINY BOLLWORM (Earias insulana). Terminal stems, squares and bolls are attacked when heavy infestations occur. Applications of controls usually result in a build up of SPIDER MITES (Tetranychus spp.). A BOLLWORM (Heliothis armigera) was common but not a serious problem. EGYPTIAN BOLLWORM (Prodenia litura) was noted during the early part of the season. LEAFHOPPERS were very numerous on cotton but stimulated little interest.

Miscellaneous: TICKS were common on cattle but most controls are confined to hand picking. Some dipping in portable vats for SHEEP KEDS was done. SUBTERRANEAN TERMITES are common in buildings but a limted amount of wood is used in construction.

Summary of Insect Conditions in Lebanon

By E. R. Millet

Cereal and Forage Insects:
SEN PEST (Eurygaster integriceps) was heavy and caused considerable damage to the wheat crop in the Bekaa Valley in 1957. A GREEN GRASSHOPPER (Locusta sp.) was quite heavy on wheat around Jabbouleh in the northern Bekaa Valley. Larvae of ALFALFA WEEVIL (Hypera postica) did severe damage to experimental alfalfa plots at Terbol in the Bekaa Valley and were also severe in some alfalfa patches south of Beirut. EUROPEAN CORN BORER (Pyrausta nubilalis) practically destroyed the corn plots at the Aabde Station again in 1957. APHIDS on alfalfa, several species, appear to be kept in check by parasites, predominantly Praon sp.

Olive Insects: OLIVE FLY (Dacus oleae) was somewhat heavy in Choueifat area in late summer, with infestations as high as 45 percent. The OLIVE MOTH (Prays oleellus) was light in this area.

Apple Insects: The CODLING MOTH (Carpocapsa pomonella) caused considerable damage during 1957 in the apple-growing areas of Lebanon. Infestations were light in the Sin-el-Fil area and at Ghazir. A heavy infestation was reported from Jabbouleh in the Bekaa. EUROPEAN RED MITE (Panonychus ulmi) was reported from the same areas with about the same degree of infestation. However, heavy infestations were also reported from Hammana. AN APPLE APHID (Anuraphis sp.) was noticed in a few instances. APPLE APHID (Aphis pomi) was reported light at Sin-el-Fil, moderate at Jabbouleh, and average at Zahle. WOOLLY APPLE APHID (Eriosoma lanigerum) was reported heavy at Ghazir, and A TINGID (Stephanitis pyri) was moderate at Jabbouleh. PEAR THRIPS (Taeniothrips inconsequens) were again abundant at Laklouk. LEOPARD MOTH (Zeuzera pyrina) was extensive in the Zahle area and light at Ghazir.

Other Fruit Insects: VINE MOTH (Lobesia botrana) was severe on grapes in the Bekaa Valley, as well as at Ghazir. PEACH TWIG BORER (Anarsia lineatella) was found in ripe apricot fruit.

Citrus Insects: MEDITERRANEAN FRUIT FLY (Ceratitis capitata) was reported not heavy at Ghazir and normal in the Sin-el-Fil and Beirut sections. Scales, both CALIFORNIA RED SCALE (Aonidiella aurantii) and FLORIDA RED SCALE (Chrysomphalus aonidum) were heavy in the north and light in the south coast region. CITRUS RUST MITE (Phyllocoptruta oleivora) was heavy at Sin-el-Fil and in the south but not heavy at Ghazir. CITRUS RED MITE (Panonychus citri) was light in the Beirut and Sin-el-Fil area.

Truck Crop Insects: A CABBAGEWORM (Pieris brassicae) was found damaging cabbage and cauliflower around Sin-el-Fil. CHAFER GRUBS (Melolontha melolontha and Polyphylla fullo) were not heavy at Sin-el-Fil, but were moderate at Jabbouleh where also MOLE CRICKETS (Gryllotalpa prob. gryllotalpa) and SNAILS caused considerable damage in vegetable gardens. At Jabbouleh, GREEN GRASSHOPPERS caused much damage in crops and vegetables. BLACK CUTWORM (Agrotis ypsilon) caused considerable damage to vegetables in the Bekaa.

Household Insects: An extremely heavy population of the HOUSE FLY (Musca domestica) was caused by a one week garbage strike in Beirut during November. ROACHES (Periplaneta americana, Blattella germanica, Supella supellectilium) were again numerous in Beirut during 1957.

Miscellaneous Insects: AN ARMORED SCALE, identified as Aspidiotus hedericola, was observed as quite severe on English ivy in Beirut.

Summary of Insect Conditions in Libya

By Arthur Kaatz

DESERT LOCUST (Schistocerca gregaria) again invaded Libya in the spring. Most of the mature swarms came from Tunisia during February, March and April, laying eggs as they went in the desert regions along the Gebel from the Tunisian Border to the Sirte Desert. A few were found in Cyrenaica areas and a very few in the Fezzan. In May and June the hatch along the Tripolitanian Gebel was moderately heavy. Prompt action by local ground baiting crews and an aerial spraying unit succeeded in killing most of the insects before they reached croplands. Several fledgling swarms did get into olive groves at Zintan and stripped the bark off the trees before they were killed or dispersed. There were some escapees from this area. Immature swarms again appeared in the Fezzan during November but were passing through into Algeria.

Cereal and Forage Insects: An ALFALFA CATERPILLAR was found in many alfalfa fields but was not serious. Prompt cutting and spraying resulted in its disappearance. DURRA STALK BORER (Sesamia cretica) again in 1957 infested most corn and sorghum fields. Spraying activities were not very successful. Late corn and sorghum were about 50 percent infested and damaged.

Olive Insects: OLIVE FLY (Dacus oleae) was a serious pest along the coastal areas that are heavily irrigated. It first appeared in July and steadily increased in numbers despite control. Damaged fruit ranged from 30-80 percent in Sorman and Zavia Oases. Although severe in other regions, it is very spotted. Five olive fly parasites have been found this year. A BRACONID (Opius concolor) which was quite extensive, A CHALCID (Eurytoma sp.) not so extensive, the other three, Pnigalio longulus, Eupelmus urozonus, and Dinarmus dacicida, were found in lesser numbers. Scale insects were not serious except in a few local areas. The scale (Pollinia pollini) was serious in several groves only. OLIVE SCALE (Parlatoria oleae) attacks were very light, although it was found in most olive-growing areas. A PYRALID (Palpita unionalis) and a TORTRICID (Cacoecimorpha pronubana) were found damaging olive leaves in the Tagiura Oasis, but not seriously. OLIVE PSYLLA (Euphyllura olivina) was quite numerous at olive-blossom time but adverse weather conditions caused it to disappear before any harm was done.

Citrus Insects: MEDITERRANEAN FRUIT FLY (Ceratitis capitata)was the serious orange crop pest in 1957. First noted in mid-July, it steadily increased despite spraying activities which were carried on by the large growers only. Small growers were unable to spray. Favorable weather conditions in October enabled the Mediterranean fruit fly to increase in such abundance as to pose a very serious threat to the orange crop in the Sorman, Zavia, Sidi Mesri, Ain Zara, and Tagiura Oases. A BLACK FLY (Lamprolonchea aurea) appeared in October and November doing secondary injury to oranges punctured by the Mediterranean fruit fly near Sidi Mesri. Among the scale insects DICTYOSPERMUM SCALE (Chrysomphalus dictyospermi) was the most numerous on oranges. A predator, the COCCINELLID (Chilocorus bipustulatus) also was found feeding on this scale insect. Some spraying was done with good control. A CHAFF SCALE (Parlatoria ziziphus) was also numerous but in spotted areas. Some spraying was effective. PURPLE SCALE (Lepidosaphes beckii) was present in several orchards near Tripoli, but not important this year. COTTONY-CUSHION SCALE (Icerya purchasi) was present in Tagiura and Sidi Mesri orchards, but not important. A natural parasite seemed to keep the infestation down.

Other Fruit Insects: Ceratitis capitata also developed on pears in the spring. It was also a serious pest on peppers. Much spraying was done to control this pest in the small red peppers. C. capitata was also found on ripe dates, figs and pomegranates. A Parlatoria scale species was serious on pear trees but was controlled by spraying. CODLING MOTH (Carpocapsa pomonella) riddled most of the local apple crop and some of the pear crop. Very little control was attempted by the growers. A BLACK FLY (Silba sp.) was found doing secondary injury to fig fruit. The Silba species black fly seemed to be present wherever the Mediterranean fruit fly was abundant. PEACH TWIG BORER (Anarsia lineatella) was a pest of almonds and peaches in the coastal belt, and a serious pest on peaches and apricots in the gebel areas of Cyrenaica. Little or no control was attempted. DATE SCALE (Parlatoria blanchardi) was a serious pest on dates in the Hon, Socna and Uaddan Oases. A little was found in oases further south but was not serious. Some spraying for control was carried on by the Agriculture Department. DRIED-FRUIT BEETLE (Carpophilus hemipterus) was found infesting ripe dates on trees along the coastal belt, and on stored dates in the market. It was also a minor pest on pomegranate fruit on trees. VINE MOTH (Lobesia botrana) was present on grapes in Tagiura area and a serious pest on grapes in northern Cyrenaica. Almost no control work was done. A BLACK FLY (Silba pendula) was present this summer on red peppers. Injury was secondary, only where the Mediterranean fruit fly was present.

Peanut Insects: A MOLE CRICKET (*Brachytrupes megacephalus*) was the serious pest to the peanut crop in 1957. Many fields had to be replanted. Where carried on, control work had excellent results. This insect was also serious on young pepper plants and to lawns in some areas. A CUTWORM was serious on peanuts in the Zliten area.

Tobacco Insects: A CUTWORM and a ROOTKNOT NEMATODE were the serious pests on tobacco. In some areas up to 60 percent of the tobacco plants were affected by the nematodes. TOBACCO SPLITWORM (*Gnorimoschema operculella*) was present in tobacco in the Tagiura and Sidi Mesri areas, serious only in a few local plots.

Other Truck and Garden Crop Insects: A BLACK APHID (probably *Aphis fabae*) destroyed several fields of broadbeans in Tagiura and Sidi Mesri areas. MELON BEETLE (*Epilachna chrysomelina*) was serious on some melon, bean and cucurbit plots but was controlled by spraying methods.

Stored Product Insects: Most of the grain warehouses in Tripolitania and Cyrenaica are infested by the RICE WEEVIL, GRANARY WEEVIL, LESSER GRAIN BORER, and the ANGOUMOIS GRAIN MOTH. All four insects are equally numerous and serious to the stored wheat and barley crops. The Angoumois grain moth also infested barley fields in the Tobruk area. Fumigation and other control methods were used but have not been very successful.

Livestock Insect Pests: Camels were affected by the CAMEL TICK (*Hyalomma dromedarii*), A MANGE MITE and LICE.

Insects Affecting Man: BED BUGS were a problem in parts of Tripoli, as were CLOTHES MOTH, COCKROACHES and SCORPIONS. MOSQUITOES were found in all irrigated areas. Spraying for FLIES last summer kept the population to low numbers in the Suk el Giuma area. Anopheline mosquitoes found during 1957 in different oases were *Anopheles algeriensis*, *A. multicolor* and *A. coustani tenebrosus*.

Summary of Insect Conditions in Pakistan

By George T. Brooks

Cereal and Forage Crop Insects: RICE STEM BORER (*Schoenobius incertulas*) caused severe damage throughout both east and west Pakistan. In some cases losses amounted to an estimated 90 percent. RICE GRASSHOPPER (*Hieroglyphus banian*), a sporadic pest, caused minor damage in parts of the Punjab, west Pakistan. Lower Sind, west Pakistan had localized light infestations of the RICE DELPHACID (*Sogata furcifera*). The RICE HISPA (*Hispa armigera*) and ARMYWORM (*Pseudaletia unipuncta*) were both confined to east Pakistan, having a generalized distribution of serious proportions. No serious pest outbreaks were recorded for wheat. Light infestation of the ENGLISH GRAIN APHID (*Macrosiphum granarium*) occurred in Quetta Region, west Pakistan, and A TERMITE (*Microtermes obesi*) in the Punjab, west Pakistan. MAIZE and JAWAR BORER (*Chilo zonellus*) caused moderate damage to maize and jawar in west Pakistan. Alfalfa throughout west Pakistan had minor infestations of the ALFALFA WEEVIL (*Hypera postica*) and the COWPEA APHID (*Aphis medicaginis*). Confined to the Karachi area was a serious infestation of the BEET ARMYWORM (*Laphygma exigua*).

Sugarcane Insects: SUGARCANE TOP BORER (*Scirpophaga nivella*) and the SUGARCANE STEM BORER (*Argyria sticticraspis*) were serious pests of sugarcane in the Punjab, west Pakistan and all of east Pakistan with amount of infestation varying between 10 to 30 percent. SUGARCANE LEAFHOPPER (*Pyrilla perpusilla*) was serious in west Pakistan only in the Peshawar region; light infestations occurred in the Punjab where previous control measures have reduced the population. The SUGARCANE WHITEFLY (Aleurolobus barodensis) and SUGARCANE MEALYBUGS (spp. undetermined) were very minor pests in both west and east Pakistan. TERMITES (Microtermes obesi and Odontotermes obesus produced sporadic infestations throughout the sugarcane area of west and east Pakistan; damage was estimated at 5 percent.

Fiber Crop Insects: PINK BOLLWORM (Pectinophora gossypiella) and SPOTTED BOLLWORMS (Earias spp.) were restricted to the Multan Region, west Pakistan, and caused only minor damage to cotton in some localized areas. Bordering the forest area of Punjab in west Pakistan, cotton was heavily infested with the COTTON LEAF ROLLER (Sylepta derogata). Control measures brought most of it under control. Throughout most of the cotton belt the COTTON APHID (Aphis gossypii) and the COTTON WHITEFLY (Bemisia tabaci) were only minor pests. Serious outbreaks of GRASSHOPPERS (Chrotogonus spp.) and the FIELD CRICKET (Acheta domestica) occurred in the Punjab, west Pakistan. COTTON GRAY WEEVIL (Myllocerus undecimpustulatus maculosus) had heavy infestations on cotton in Sind and Punjab, west Pakistan. A LEAFHOPPER (Empoasca sp.) occurred in heavy proportions throughout Sind, west Pakistan. Very light and sporadic infestations of TERMITES occurred throughout the cotton belt. In east Pakistan no serious outbreaks were reported on jute; however, the JUTE SEMI-LOOPER (Anomis sabulifera)and the JUTE HAIRY CATERPILLAR (Diacrisia obliqua) were reported in light to moderate infestations.

Vegetable Insects: CABBAGE BUTTERFLY (Pieris brassicae) was found on cruciferous crops throughout Pakistan but was a serious pest only in Peshawar, west Pakistan. In the Karachi area the DIAMONDBACK MOTH (Plutella maculipennis) was a serious pest on cabbage. Melons throughout west Pakistan showed serious infestations of the FRUIT FLIES (Dacus spp.), HADDA BEETLES (Epilachna spp.) and the RED PUMPKIN BEETLE (Aulacophora foveicollis). Moderate infestations of AN APHID (Aphis sp.) were reported from most of the area. Serious outbreaks of the BRINJAL BORER (Leucinodes orbonalis) were reported on eggplant (local name "brinjal") for the Karachi and Punjab areas of west Pakistan whereas the BRINJAL LEAF ROLLER (Eublemma olivacea) was the major and serious pest reported for east Pakistan. POTATO JASSID (Empoasca devastans) was the only serious pest reported on potato and it appeared confined largely to the southern regions of west Pakistan. On peppers and tomatoes devastans and A THRIPS (Scirtothrips dorsalis) were reported as serious pests in the Karachi area. TERMITES (Odontotermes obesus and Microtermes obesi) did sporadic damage to peppers and tomatoes in the same area.

Fruit Insects (Other than Citrus:) On mango in the Karachi area only the MANGO STEM BORER (Batocera sp.) was a serious pest. Previously conducted control measures in this area have considerably reduced other populations. However, in other areas the MANGO LEAFHOPPERS (Idiocerus spp.) and the MANGO MEALYBUG (Drosicha stebbingi) were serious pests. Throughout most of west Pakistan Dacus spp. continued as a major pest of guava. Only one serious pest of grapes was found and that, the GRAPEVINE THRIPS (Rhipiphorothrips cruentatus), was of serious proportions in the Karachi area. In the Quetta area figs were mildly infested with the FIG BORER (Batocera rufomaculata). Apple trees in the Quetta Region, west Pakistan were severely infested with the CODLING MOTH (Carpocapsa pomonella) and the HAIRY CATERPILLAR (Euproctis signata). The same pests extended their distribution into the Peshawar Region, west Pakistan, but there the infestations were very light. WOOLLY APPLE APHID (Eriosoma lanigerum), A BLACK APHID (Pterochlorus persicae), GREEN PEACH APHID (Myzus persicae) and Anuraphis sp. were distributed throughout the fruit producing areas of the Quetta and Peshawar Regions, west Pakistan, infesting peach, pear, plum and apple in varying degrees ranging from moderate to heavy. SAN JOSE SCALE (Aspidiotus perniciosus) on apple, peach and plum, OLIVE SCALE (Parlatoria oleae) on pears, and A SCALE (Lecanium coryli) on peach and plum were distributed throughout the fruit-producing areas of Quetta and Peshawar, varying in degree of infestations from moderate to heavy. PEACH FRUIT FLY (*Dacus zonatus*) population was reduced through previous control during the year to only a mild infestation.

Citrus Fruit Insects: CITRUS LEAF MINER (*Phyllocnistis citrella*)and CALIFORNIA RED SCALE (*Aonidiella aurantii*)were reported as having moderate populations throughout the citrus producing areas of Sind, Punjab and Peshawar, west Pakistan. Sind recorded a serious infestation of the CITRUS BLACKFLY (*Aleurocanthus woglumi*)and the CITRUS WHITEFLY (*Dialeurodes citri*) but the infestation was mild in other citrus-producing areas. The Punjab was the only area reporting serious outbreaks of the CITRUS PSYLLA (*Diaphorina citri*).

Tobacco Insects: The only serious tobacco pest found in the tobacco producing areas of west Pakistan was AN APHID (*Aphis* sp.)

Tea Insects: No serious pests of tea were reported in 1957, probably because tea production is organized on a commercial basis with regular plant protection measures being carried out. Only A MIRID (*Heliopeltis theivora*)was recorded as a mild infestation in the plantation around Sylhet, east Pakistan.